

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Development of Nationwide Broadband Data to)	
Evaluate Reasonable and Timely Deployment of)	
Advanced Services to All Americans,)	WC Docket No. 07-38
Improvement of Wireless Broadband)	
Subscribership Data, and Development of Data on)	
Interconnected Voice over Internet Protocol)	
(VoIP) Subscribership)	

**REPLY COMMENTS OF CONSUMERS UNION,
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I. INTRODUCTION

This Notice of Proposed Rulemaking seeks input into how the Commission can improve its data gathering practices that enable it to oversee the reasonable and timely deployment of advanced telecommunication services, as mandated by the Telecommunications Act of 1996 (“The Act”).¹ The Commission’s data gathering efforts stem from their duty to “determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.”² In assigning the Commission this duty, Congress chose a very specific definition of “advanced telecommunications capability”. The Act states, “[t]he term ‘advanced telecommunications capability’ is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.”³

In our initial comments in this proceeding, we offered modest and reasonable changes to the Form 477 reporting requirements that would finally enable the Commission to begin to adequately fulfill its obligations under Section 706.⁴ In these reply Comments we offer further evidence of the value of enhanced data reporting requirements, and illustrate how these additional reporting rules will not be a burden on providers.

¹ 47 U.S.C. § 157. See § 706(b) of the Telecommunications Act of 1996, 104 P.L. 104; 110 Stat. 56; 1996 Enacted S. 652; February 8, 1996. Section 706(b) details the mandate for periodic inquiry.

² *Ibid.*

³ See § 706(c) of The Act.

⁴ These recommendations were briefly as follows: The Commission should require providers to report the number of subscribers at the ZIP or ZIP+4 level; The Commission should modify its speed tiers to a more granular level to better monitor marketplace development; The Commission should revise the definition of “advanced services”; The Commission should gather information at the 9-digit ZIP code level; The Commission should collect data on service price and “value”; The Commission should conduct consumer surveys; The Commission should monitor provider business practices.

We discuss four areas in these reply comments.

First, we highlight how the California Public Utilities Commission (CPUC) has successfully required the reporting of household broadband availability and household broadband subscribership at the very granular and data-rich Census Block Group level. Three of the largest U.S. broadband providers -- AT&T, Verizon and Cox -- have all submitted availability at the Census Block Group level in California, and all three are expected to submit subscriber counts at this level shortly. We feel this is powerful and compelling evidence that this “holy grail” of data reporting is indeed feasible, unburdensome, and can be implemented quickly.

Second, we reiterate the need for more granular speed tiers on Form 477, and rebut arguments for maintaining the current tiers. We resubmit a slightly modified proposal that enables continuity in data should the Commission decide to modify the sizes of the bins in its speed tiers.

Third, we petition the Commission to only count the broadband connections that adhere to the four principles in the *2005 Broadband Policy Statement*. Under this lens, the majority (if not all) of the retail mobile wireless data connections available in the U.S. would not be considered broadband. We believe that in order for the Commission to accurately carry out the directive of Section 706, that it must apply the four principles in the *Broadband Policy Statement* when considering whether deployment is reasonable and timely. The meaningfulness of the Section 706 reports are undermined if they are based on data and information that does not adhere to its own policy principles.

Finally, we rebut the critiques of Organization for Economic Cooperation and Development (OECD) data submitted by the U.S. Telecom Association. We illustrate the flaws and inaccuracies in USTA’s comments, and submit other non-OECD international data that

supports the conclusion that the U.S. has a broadband problem -- a problem that accurate data can help to resolve.

II. DISCUSSION

A. The Commission Should Require the Reporting of Subscriber Counts at the Census Block Group Level or at the ZIP+4 Level

In our initial comments we urged the Commission to collect and report subscriber counts at a local granular level. We illustrated how subscriber counts would provide invaluable information, enabling the calculation of local household broadband penetration as well as local marketshare and market concentration (via the Herfindahl-Hirschman Index). We argued that requiring the reporting of subscriber counts at the larger 5-digit ZIP code level would be a vast improvement over the current methodology, but that the reporting at a much more granular level, such as the 9-digit ZIP code level, would provide researchers and the Commission with the type of information needed to formulate efficient and effective broadband policies.

There is near universal consensus among the research community and in the record that the current Form 477 ZIP code methodology overstates the true level of broadband deployment and adoption, and is of little real-world value in the policymaking process.⁵ These limitations are

⁵ For example: “Broadband Deployment is Extensive throughout the United States, but it is Difficult to Assess the Extent of Deployment Gaps in Rural Areas”, United States Government Accountability Office, Report to Congressional Committees, GAO-06-426, May 2006 (“GAO Report”); “The Deployment and Adoption of Broadband Service: A Household Level Analysis”, Michael Clements and Amy Abramowitz, Presented at the Telecommunications Policy Research Conference, Fairfax, VA, September 30, 2006; Testimony of Mr. George Ford, Chief Economist and Editorial Advisory Board Member, Phoenix Center for Advanced Legal and Economic Public Policy Studies, before the U.S. House of Representatives, Committee on Energy and Commerce. Subcommittee on Telecommunications & the Internet, May 17, 2007; In the Matter of Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP)

due to the large geographic size of ZIP Codes and because the Commission reports the number of providers reporting a served customer in a given ZIP code, as opposed to more meaningful metrics like subscriber counts and marketshare or concentration. Thus the problem with the current ZIP codes has two dimensions, each with differing solutions. The solution to the lack of meaning in the current methodology is the reporting of data that allows for penetration and HHI calculations -- subscriber counts.

The solution to the problem of the large geographic size of 5-digit ZIP codes is to require reporting at a smaller geographic level. In our initial comments we argued for the ZIP+4 level, as this is information that broadband providers already possess or can obtain relatively easily. We acknowledge that there are some minor limitations with ZIP+4 reporting. It is true that ZIP codes are not static and that some may appear or disappear over time, but the amount of fluctuation is quite minor, and applies mainly to large businesses -- not the residential market segment that is of paramount concern in this proceeding. We also acknowledge that ZIP+4 areas do not always correspond to specific geographic points -- that in some instances they encompass non-contiguous areas. However, we again believe that this is a minor concern. Together these limitations are vastly outweighed by the enhanced value of knowing the data at the ZIP+4 level and the relative ease of the burden of reporting placed on providers.

We do however recognize that there is a better granular geographic metric to use that doesn't have the limitations of ZIP+4 and is ready-made for demographic analysis -- the U.S. Census Block Group (CBG). Census Block Groups are the "Holy Grail" of granularity -- they

Subscribership, WC Docket No. 07-38, Notice of Proposed Rulemaking, FCC 07-17 (rel. April 16, 2007) ("NPRM") at ¶ 27; Joint Comments of the Massachusetts Department of Telecommunications and Cable and the Maine Public Utilities Commission, pg. 8, WC Docket No. 07-38; Comments of State of New York Department of Public Service, pg. 2, WC Docket No. 07-38; Comments of Alliance for Public Technology, pg. 6, WC Docket No. 07-38; Comments of Rep. Tom Sloan, WC Docket No. 07-38.

correspond to specific geographic areas that do not change over time; they are very localized, often no larger than a few city blocks; and they are of immense value for demographic analysis, as the 2000 Census gathered a host of data at this level -- including data such as household income, race, urbanicity, age, gender and other factors that are important drivers of broadband deployment and adoption.

We believe that the Commission should require the reporting of subscriber counts at the Census Block Group level. Though it may seem that this requirement will be more burdensome on providers than a ZIP or ZIP+4 reporting requirement, evidence introduced in this proceeding illustrates that this is not the case. In their comments, the California Public Utilities Commission (CPUC) reported that they require all statewide video franchisees to report availability and subscriber information at the Census tract level.⁶ In their findings implementing this reporting requirement, the CPUC found that there would be no difficulty for providers to report at this level, stating that “communications companies maintain billing databases that include subscriber addresses, and any company may purchase or develop the systems to correlate the holder’s customer street address data to add the ability to comply with the census tract requirement.”⁷ In their comments the CPUC noted that three statewide franchisee applicants have defined their service “footprints” (i.e. where they’ve deployed) by Census Block Groups, and that one franchisee has submitted broadband subscribership info by Census tract, with data from the other two expected shortly.

⁶ Comments of The California Public Utilities Commission and of the People of the State of California on the Development of Broadband Data, pg. 6-10, WC Docket No. 07-38.

⁷ D.07-03-014, Decision Adopting a General Order and Procedures to Implement the Digital Infrastructure and Video Competition Act of 2006 (in R.06-10-005, Rulemaking for Adoption of a General Order and Procedures to Implement the Digital Infrastructure and Video Competition Act of 2006), March 1, 2007.

Who are these three companies? AT&T, Verizon and Cox Communications.⁸ AT&T and Verizon are the two largest providers of residential DSL service in the U.S., together providing nearly 40 percent of all U.S. broadband connections.⁹ They are also two of the most vocal opponents to enhance Form 477 reporting, despite the fact that they are reporting the precise information the Commission needs in the Union’s largest state. We think this fact should factor heavily into the Commission’s consideration of what would and would not be “burdensome”. California’s Digital Infrastructure and Video Competition Act of 2006 was signed into law on September 29th 2006, and in just a few short months since these three large companies -- **Verizon, AT&T and Cox -- have all submitted household service availability at the Census Block Group level, and all three will soon have submitted household subscriber counts at the Census tract level.** Thus it appears that the claims of “burden” of reporting this critical data are completely without merit, and it also appears that both cable modem and DSL providers are able to provide this information. Therefore we strongly encourage the Commission to begin requiring all providers of high-speed and advanced services to report their deployments and subscriber counts at the Census Block Group/tract level, separated by residential and business subscribers, and ask that the Commission make this data publicly available. If there are *legitimate* reasons to withhold certain information from public view, then we strongly encourage the Commission to use the reported data to calculate and report publicly the total and household broadband penetration at the Census Block Group/tract level, as well as calculate and report publicly the four-firm concentration ratios and HHIs at the Census Block Group/tract level. Knowing these measures of broadband deployment, adoption and competition at such a granular

⁸ <http://www.cpuc.ca.gov/static/hottopics/2telco/videofranchising.htm>

⁹ Leichtman Research Group, First Quarter 2007 Broadband Totals, May 7, 2007. AT&T had the most DSL lines at 12.85 million, followed by Verizon with 7.4 million.

(and data rich) level will enable researchers and the Commission to have a complete understanding of the broadband market, and in turn, better able to formulate and implement broadband policies that are efficient and effective towards reaching the goal of universal affordable broadband deployment and adoption.

However, if for some reason the Commission opts not to require reporting at the Census Block Group/tract level, we urge the Commission to require the reporting of data at the ZIP+4 level. While not ideal, we believe ZIP+4 reporting will be a vast improvement over the current system, and will not place any additional burden on reporting entities.

B. The Commission Should Modify Its Current Speed Tiers

In our initial comments we argued that the Commission should modify its existing speed tier system to better capture the true and evolving state of the broadband access marketplace. We argued that the Commission's current system completely ignores the importance of upload speed, which is in direct conflict with the goals of Section 706 of The Act. We believe the Congressional intent to foster a universal and affordable two-way broadband communications network was made clear in Section 706, which defines advanced telecommunications service as "high-speed, switched, broadband telecommunications capability that enables users to *originate and receive* high-quality voice, data, graphics, and video telecommunications using any technology" (emphasis added). The Commission's current speed tier monitoring system completely ignores the *originate* (or upload) aspect of this Congressional directive and must be changed.

In addition to changing its speed tiers to adequately monitor upload speeds, we also argued that the size of the current speed tier bins are too narrow, and thus lead to an inaccurate understanding of the current and evolving state of the broadband marketplace. We suggested

new speed tier monitoring system that consists of 11 matching upload and download bins, as well as an additional upload bin that captures connections with upload speeds below 200 kbps. We feel that the bin sizes in our proposed model would better enable the Commission to fulfill the mandate of Section 706 -- to monitor the deployment of broadband connections that enable the user to originate and receive high-quality video telecommunications. The bin sizes are narrower towards the ranges of speeds that enable high-quality video transmission (using various compression protocols) and become larger as speeds increase. This structure enables the Commission to achieve the objectives of Section 706, while also allowing for a complete tracking of marketplace changes over time.

In the initial comment record, no entity expressed objections to a more comprehensive accounting of upload speeds. However, some commenters did express concern that changing the speed tier system could render time-series analysis impossible.¹⁰ This is an important concern, but one that is easily addressed by decreasing the bin sizes, but maintaining the current cutoff points. We have slightly modified our initial proposal to accommodate this research need.¹¹

Figure 1 illustrates our proposed speed tier system.

¹⁰ Comments of The National Cable & Telecommunications Association, pg. 12-13, WC Docket No. 07-38; Comments of Sprint Nextel Corporation, pg. 6, WC Docket No. 07-38; Comments of Time Warner Cable, pg. 6, WC Docket No. 07-38.

¹¹ In our initial proposal the 12 upload speed categories were: Less than 200 kbps; 200 kbps to 500 kbps; 500 kbps to 800 kbps; 800 kbps to 1 Mbps; 1 Mbps to 3 Mbps; 3 Mbps to 6 Mbps; 6 Mbps to 10 Mbps; 10 Mbps to 15 Mbps; 15 Mbps to 30 Mbps; 30 Mbps to 50 Mbps; 50 Mbps to 100 Mbps; Greater than 100 Mbps. The 11 download categories were: 200 kbps to 500 kbps; 500 kbps to 800 kbps; 800 kbps to 1 Mbps; 1 Mbps to 3 Mbps; 3 Mbps to 6 Mbps; 6 Mbps to 10 Mbps; 10 Mbps to 15 Mbps; 15 Mbps to 30 Mbps; 30 Mbps to 50 Mbps; 50 Mbps to 100 Mbps; Greater than 100 Mbps. We have slightly modified the tiers in order to maintain comparability between this new expanded system and the current reporting methodology. The 1 Mbps to 3 Mbps tiers are now 1 Mbps to 2.5 Mbps; the next tier is now be 2.5 Mbps to 6 Mbps' the 15 Mbps to 30 Mbps tier is now 15 Mbps to 25 Mbps tier; the next tier is now 25 Mbps to 50 Mbps.

Figure 1: Proposed Speed Tiers That Should Be Incorporated into Form 477

Upload Speed	Download Speed										
	200 kbps to 500 kbps	500 kbps to 800 kbps	800 kbps to 1 Mbps	1 Mbps to 2.5 Mbps	2.5 Mbps to 6 Mbps	6 Mbps to 10 Mbps	10 Mbps to 15 Mbps	15 Mbps to 25 Mbps	25 Mbps to 50 Mbps	50 Mbps to 100 Mbps	Greater than 100 Mbps
Less than 200 kbps	?	?	?	?	?	?	?	?	?	?	?
200 kbps to 500 kbps	Symmetrical	?	?	?	?	?	?	?	?	?	?
500 kbps to 800 kbps		Symmetrical	?	?	?	?	?	?	?	?	?
800 kbps to 1 Mbps			Symmetrical	?	?	?	?	?	?	?	?
1 Mbps to 2.5 Mbps				Symmetrical	?	?	?	?	?	?	?
2.5 Mbps to 6 Mbps					Symmetrical	?	?	?	?	?	?
6 Mbps to 10 Mbps						Symmetrical	?	?	?	?	?
10 Mbps to 15 Mbps							Symmetrical	?	?	?	?
15 Mbps to 25 Mbps								Symmetrical	?	?	?
25 Mbps to 50 Mbps									Symmetrical	?	?
50 Mbps to 100 Mbps										Symmetrical	?
Greater than 100 Mbps											Symmetrical

We have changed our proposed 1 Mbps to 3 Mbps tier to a 1 Mbps to 2.5 Mbps tier and have modified the next tier to be 2.5 Mbps to 6 Mbps. Similarly, we have changed our proposed 15 Mbps to 30 Mbps tier to a 15 Mbps to 25 Mbps tier and have modified the next tier to be 25 Mbps to 50 Mbps. These new tiers allow for the data collected under the current tiers to remain useful for time-series analysis. Figure 2 illustrates how the new, smaller bins can be grouped together to correspond to the current speed tiers.

Figure 2: Proposed Speed Tiers Allow for Historical Analysis

Upload Speed	Download Speed										
	200 kbps to 500 kbps	500 kbps to 800 kbps	800 kbps to 1 Mbps	1 Mbps to 2.5 Mbps	2.5 Mbps to 6 Mbps	6 Mbps to 10 Mbps	10 Mbps to 15 Mbps	15 Mbps to 25 Mbps	25 Mbps to 50 Mbps	50 Mbps to 100 Mbps	Greater than 100 Mbps
Less than 200 kbps				Old <200kbps upload tier							
200 kbps to 500 kbps											
500 kbps to 800 kbps											
800 kbps to 1 Mbps											
1 Mbps to 2.5 Mbps											
2.5 Mbps to 6 Mbps											
6 Mbps to 10 Mbps											
10 Mbps to 15 Mbps											
15 Mbps to 25 Mbps											
25 Mbps to 50 Mbps											
50 Mbps to 100 Mbps											
Greater than 100 Mbps											

Some commenters specifically opposed splitting the current 200 kbps to 2.5 Mbps tier into smaller bin sizes.¹² While others supported the split, but only into two tiers, not the four we have proposed.¹³ However, the opposition to splitting the 200 kbps-2.5 Mbps tier seems to be motivated more by a desire to obfuscate than enlighten.

If the tier remains at 200 kbps to 2.5 Mbps, then it disguises the true slow nature of the mobile wireless data services sold by companies like AT&T, Verizon and Sprint. For example, AT&T's \$80 per month "Data Connect" plan boasts speeds between 400 and 700 kbps, but real world tests of their service reveal that their EDGE/GPRS network rarely achieves these speeds and often are below the 200 kbps threshold.¹⁴ Sprint and Verizon both claim that their EVDO Rev A service is available to over 200 million Americans and offers download speeds between 600 kbps and 1.4 Mbps. However, a recent real world test of Verizon's mobile data service reveals that their actual speeds never reach the 1.4 Mbps upper limit, and are often far below the claimed 600 kbps minimum.¹⁵ If the Commission leaves the current 200 kbps to 2.5 Mbps speed tier as it is, it will imply that these mobile wireless connections -- which operate on the low end of that scale -- are somehow equivalent to the products such as ADSL, which are closer to the 2.5

¹² Comments of AT&T Inc., pg. 7, WC Docket No. 07-38; Comments of Sprint Nextel Corporation, pg. 7, WC Docket No. 07-38.

¹³ Comments of United States Telecom Association, Section, pg. 14, WC Docket No. 07-38 ("USTA Comments"); Joint Comments of Verizon and Verizon Wireless, pg. 23, WC Docket No. 07-38; Comments of The Wireless Communications Association International Inc., pg. 6, WC Docket No. 07-38.

¹⁴ Recent tests show users of the iPhone rarely get speeds above 200 kbps, with the bulk achieving top speeds near 120 kbps. See <http://www.dslreports.com/shownews/How-bad-is-ATT-EDGE-iPhone-speed-anyway-85653>.

¹⁵ Ars Technica tested Verizon's EVDO service in and around areas surrounding Chicago Illinois. In some areas where Rev A service is technically available, the testers were only able to access the slower "National Access" EVDO service. See <http://arstechnica.com/reviews/other/broadband-on-the-go.ars>

Mbps end of the scale. The Commission must split the tier into four bins to get a more meaningful sense of the proliferation of true broadband products in the marketplace.

Verizon proposes splitting the 200 kbps to 2.5 Mbps tier in two, but asks that it be composed of a 200 kbps to 700kbps tier and a 700kbps to 2.5 Mbps. While this split may shed some light onto the slow mobile wireless offerings, it allows Verizon and other providers of slow-speed “DSL-Lite” offerings to lump these 768 kbps maximum connections in with those offering speeds above 2 Mbps. It is important for the Commission to know if the connections deployed are on the low or high end of this scale. The 768 kbps max connections are only capable of delivering highly compressed low-quality video data, while those closer to 2.5 Mbps are able to receive broadcast quality compressed video (see Figure 3). This still does not approach the “high-quality video” standard of Section 706, but knowing the actual state of the marketplace is vital to the Commission’s obligations under The Act.

Figure 3: Speeds Required for Video Transfer¹⁶

Data Speed Required (Mbps)	Application	Compression Standard
0.384	Low Quality Video Conference	MPEG-4
1.5	Video in a Window (You Tube)	MPEG-1
1 to 2	VHS Quality Full Screen	MPEG-2
2 to 3	Broadcast NTSC	MPEG-2
4 to 6	Broadcast PAL	MPEG-2
8 to 10	Professional PAL	MPEG-2
12 to 20	Broadcast HDTV	MPEG-2
28 to 40	DVB Satellite Multiplex	MPEG-2 Transport
32 to 40	Professional HDTV	MPEG-2
34 to 50	Contribution TV	MPEG-2-I
140	Contribution HDTV	MPEG-2-I
168	Raw NTSC	Uncompressed
216	Raw PAL	Uncompressed
270	Raw Contribution PAL	Uncompressed
1000 to 1500	Raw HDTV	Uncompressed

¹⁶ See <http://erg.abdn.ac.uk/research/future-net/digital-video/mpeg2.html>.

Constructing a more meaningful and informative speed reporting system should be a top priority of this rulemaking procedure. Simply stated, it is impossible for the Commission to fulfill its obligations under Section 706 unless it has a very detailed and precise understanding of the capabilities of the Internet services that network operators are deploying and American consumers are adopting. The Commission also has a statutory obligation to monitor upload speeds. To date, the agency has completely ignored the importance of upload speeds, which are one-half of the *two-way* communications equation. We feel that the Commission's failure to emphasize and monitor upload speeds has fostered an industry that deploys extremely asymmetrical connections. FCC data reveals that the proportion of slow connections is on the rise¹⁷ -- a trend likely to continue, leaving home users without the ability to originate high-quality high-bandwidth content, regardless of future advances in compression technology.

C. The Commission Should Only Count Mobile Wireless Lines that Adhere to the Four Principles of the Commission's "Broadband Policy Statement"

In 2005 the Commission issued a *Policy Statement* that would "ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers." To these ends, the Commission adopted four principles¹⁸:

¹⁷ In December 2005, 15% of broadband lines had upload speeds slower than 200kbps. By June 2006 this had increased to 22% of lines.

¹⁸ In the Matters of *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities* (CC Docket No. 02-33); *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services* (CC Docket No. 01-337); *Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements* (CC Docket Nos. 95-20, 98-10); *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities – Internet Over Cable Declaratory Ruling* (GN Docket No. 00-185); *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable* (CS Docket No. 02-52); FCC 05-151, Released September 23, 2005 ("Broadband Policy Statement").

Principle 1: “To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to access the lawful Internet content of their choice.”

Principle 2: “To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.”

Principle 3: “To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to connect their choice of legal devices that do not harm the network.”

Principle 4: “To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to competition among network providers, application and service providers, and content providers.”

In the *Broadband Policy Statement* the Commission stated that it would “incorporate the above principles into its ongoing policymaking activities” regarding broadband deployment and adoption. Thus it seems quite clear that the implementation of Section 706 via the Form 477 reporting requirements should be subject to adherence to these four principles.

But the mobile wireless broadband offerings of the major U.S. carriers do not adhere to *any* of the four principles. The technical limitations and terms of service restrictions placed on these products render them as distinct and separate products from the broadband offerings of cable modem and DSL providers.

Principle One is violated by the mobile wireless carriers, as their customers are forbidden from using their connections to stream audio or video files, as well as restrictions on other legitimate content access activities such as peer-to-peer file sharing.¹⁹

¹⁹ There are numerous examples of content access restrictions imposed by the major U.S. mobile Internet companies. For example: Sprint (“May place restrictions on accessing certain Data Content (such as certain websites, applications, etc.), impose separate charges, limit throughput or the amount of data you can transfer, or otherwise limit or terminate Services”); Verizon Wireless (“Examples of prohibited uses include, without limitation, the following: (i) continuous uploading, downloading, or streaming of audio or video programming or games; (ii)

The major carriers also violate Principle Two. For example, the much-hyped iPhone prevents users from running Java or Flash applications, which cripples the functionality of many Web sites. The carriers also prevent the use of third-party Voice Over Internet Protocol (VoIP) applications like Skype.²⁰

The carriers certainly don't adhere to the "Carterfone" policy outlined in Principle Three. The mobile Internet devices sold by the carriers are locked, and when consumers switch carriers they are unable to take their phone with them, rendering the otherwise normally operating device completely useless. Some carriers may claim the subsidized price of some portable devices offsets this inconvenience, but the iPhone again demonstrates this is not the case. Users purchase the iPhone through Apple Computer at full price, yet are still tied to AT&T's wireless data service. If a user wishes to change providers, the iPhone becomes inoperable -- even if the

server devices or host computer applications, including, but not limited to, Web camera posts or broadcasts, automatic data feeds, automated machine to-machine connections or peer-to-peer (P2P) file-sharing; or (iii) as a substitute or backup for private lines or dedicated data connections."); AT&T ("Unlimited plans cannot be used for uploading, downloading or streaming of video content (e.g. movies, tv) music or games").

²⁰ Examples of restricting consumer access to applications and services include: Sprint ("we may place restrictions on accessing certain Data Content (such as certain websites, applications, etc.), impose separate charges, limit throughput or the amount of data you can transfer, or otherwise limit or terminate Services"); Verizon Wireless ("Examples of prohibited uses include, without limitation, the following: (i) continuous uploading, downloading, or streaming of audio or video programming or games; (ii) server devices or host computer applications, including, but not limited to, Web camera posts or broadcasts, automatic data feeds, automated machine to-machine connections or peer-to-peer (P2P) file-sharing; or (iii) as a substitute or backup for private lines or dedicated data connections."); AT&T ("Prohibited uses include, but are not limited to, using services: (I) with server devices or with host computer applications, including, without limitation, web camera posts or broadcasts, continuous jpeg file transfers, automatic data feeds, telemetry applications, peer-to-peer (P2P) file sharing, automated functions or any other machine-to-machine applications; (II) as substitute or backup for private lines or dedicated data connections; (III) for voice over IP; (IV) in conjunction with WWAN or other applications or devices which aggregate usage from multiple sources prior to transmission").

new carrier's network is compatible with the GSM standard. It is clear that the wireless data carriers are engaging in anticompetitive behavior to reduce customer "churn".

Principle Four is violated in numerous ways in the wireless data industry. Carriers "tie" consumers to their networks by crippling portable devices (as indicated above). Carriers also force consumers into long-term two-year contracts that have exorbitant "early termination" fees (\$175 and higher). These practices impose high switching costs and reduce the normal amount of customer "churn" that would occur in a truly competitive market. There are other examples of Principle Four violations. Some carriers force users to use their preferred content, crippling similar content obtained from other vendors. For example, users of Verizon's mobile data service portable handheld devices who wish to download video files must use Verizon's "V-Cast" service, as video files obtained by other means won't work on Verizon's device.²¹

It is clear that the mobile wireless data services offered by the U.S. carriers are in no way comparable to the more open broadband connections offered by the traditional wireline DSL and cable modem providers. Setting aside for the moment the issue of how to count a wireless phone that is merely *capable* of 200 kbps speeds (but not necessarily used to access the Internet)²², it is

²¹ In their terms of service, Verizon Wireless states "Examples of prohibited uses include, without limitation, the following: (i) continuous uploading, downloading or streaming of audio or video programming or games". For an additional fee of between \$13 and \$25 per month, Verizon's V Cast service allows a customer the ability to view Verizon approved video. Similarly, AT&T states, "Except for content formatted in accordance with AT&T's wireless content standards, unlimited plans cannot be used for uploading, downloading or streaming of video content (e.g. Movies, TV), music or games". AT&T has begun to offer AT&T Video. At an additional cost of \$20 per month, a user has the capability of accessing AT&T approved content. Most of the content available through these services could be viewed at no cost were mobile wireless customers provided access to an open Internet. See <http://www.wireless.att.com/learn/messaging-internet/media-entertainment/video.jsp> and <http://getitnow.vzwshop.com/index.aspx?id=mobileTV#overview>.

²² We believe the Commission's current mobile wireless reporting methodology likely overstates the true level of residential broadband adoption, as the overwhelming majority of users with 3G capable mobile phones likely are using their data capabilities as a complimentary

clear that these services do not adhere to the four principles of the *Broadband Policy Statement* and therefore should not be included in the totals reported by the Commission in its Form 477 data reports. Nor should these connections be considered when the Commission evaluates the state of reasonable and timely deployment of advanced telecommunication services in its pending Section 706 report.

We echo the comments of industry analyst David Isenberg, who recently stated, “the FCC shouldn't have it both ways. If wireless broadband services are to be included as broadband services, they should be subject to the Policy Statement. On the other hand, if they're not held to the Policy Statement's principles, such crippled, attenuated [connections] should not be included in the FCC's broadband statistical report.”²³

D. A Commission Authored International Comparative Analysis of Broadband Markets Would Be Valuable, But Critiques of OECD Data are Without Merit

On April 23rd 2007 the Organization for Economic Cooperation and Development (OECD) released their latest semi-annual broadband penetration rankings, which revealed that the U.S. had fallen from 12th place among the 30-member nations, down to 15th place in just 6 months.²⁴ This slide continued a downward trend for America, falling from a high of 4th place in 2001. The OECD data portended other problems for the U.S., as our annual penetration growth was only the 20th highest among the 30 nations, and our semi-annual growth was ranked 24th.

service to their home DSL or cable modem connections. Likewise, the users of business mobile wireless data connections (which account for 90 percent of all mobile wireless high-speed lines) also are certain to use the device as a compliment to their wired office DSL, wireline, or cable modem connection.

²³ <http://isen.com/blog/2007/07/my-comment-on-fcc-network-neutrality.html>.

²⁴ “OECD Broadband Statistics to December 2006”, available at http://www.oecd.org/document/7/0,3343,en_2649_37441_38446855_1_1_1_37441,00.html.

But unlike the previous OECD reports, this release was met with a fierce response by incumbent providers, as well as an equally intense critique from several members of the Executive branch.²⁵ In this proceeding the United States Telecom Association offered a list of the critiques often cited in this debate.²⁶ However, all of the critiques lobbed at the OECD data simply fall apart upon closer examination.

Furthermore, the OECD does not have a monopoly on international broadband comparisons. There are other sources of data gathered by private firms and other NGOs like the International Telecommunications Union (ITU). These data all indicate that the U.S. has a real broadband problem, which is chiefly due to poor policy decisions that have fostered an anticompetitive duopoly marketplace. Our European and Asian counterparts are outperforming us because they've taken the necessary initiative to ensure their broadband markets are characterized by vigorous competition that offers consumers more choice, faster speeds and lower prices.

For example, USTA critiques the OECD for reporting per capita broadband adoption instead of household adoption. However, the U.S. is still woefully behind in household adoption. Point Topic, a U.K. based private data company is recognized as one of the most reliable sources of international telecommunications data. They have been collecting broadband data from hundreds of countries for nearly a decade, and they produce quarterly estimates of household-level broadband penetration. Their data is based on a census-like assessment of all providers,

²⁵ See for example: "Luncheon Address", Commissioner Robert M. McDowell, Broadband Policy Summit III, June 7, 2007, Crystal City, Virginia; for Verizon's rebuttals see <http://www.pff.org/events/eventpowerpoints/062807broadbandconference/Weller%20PFF%20CPI%20broadband%20June%2028%202007.ppt> or <http://policyblog.verizon.com/policyblog/blogs/policyblog/linkhoewing9/280/the-oecd-numbers-what-they-don-t-show.aspx>.

²⁶ USTA Comments, Section V.

and is also derived from International Telecommunications Union data, the world's most authoritative source of international telecommunications data. And their data as of the end of 2006 shows the U.S. is ranked 15th among the 30 OECD nations in household broadband penetration. Simply stated, whether you look at total penetration or household penetration, the U.S. is still ranked 15th.

USTA also tries to compare the U.S. to the EU, but does so using unsourced data. Since the USTA comments mirror those circulated by Verizon, we can point out why the USTA's EU-U.S. comparison is faulty. Their data is based on household broadband adoption reported by the Pew Internet and American Life Project (survey data), compared against data gathered by the European Commission (also survey data). But there are several fatal flaws to this comparison. First, the surveys are separate, collected by different methods (the Pew survey is a phone interview of U.S. adults, while the EC survey is a face-to-face survey of any random household member, conducted by a door-to-door canvassing) and have different questions. Second, the surveys were conducted at two different times (the EC surveys lagged the Pew surveys by three months; the most recent Pew survey was conducted February-March 2007 while the EC's was conducted November-December 2006). Third, the sample size for each country surveyed within the EU was much smaller than the Pew survey. Pew surveyed 2,200 adults in its 2007 study, while the median number of respondents surveyed in the 2006 EC survey was just over 1,000. This means the margin of error is significantly higher for the EC study than it is for the Pew study. Simply stated, the two cannot be meaningfully compared.

A much more thorough source is available from Point-Topic, which uses a census-like assessment of broadband subscribership (via an assessment of the number of lines by type and customer type for every single provider offering service in nearly 100 countries). Point-Topic's

household broadband adoption data is also based upon data provided by the International Telecommunications Union (ITU), the most widely recognized source of accurate and comparable country-level information and communications technology data. Point-Topic's approach is arguably much more accurate than a small sample self-reported user survey. Point-Topic's latest data (data as of April 2007, published June 2007) indicates that there are 9 EU countries with higher levels of household broadband adoption than the U.S. (The Netherlands, Denmark, Finland, France, Sweden, the U.K., Luxembourg, Belgium, and Estonia).

Furthermore, the USTA's comparison of the U.S. to the EU should be qualified in the proper context. The 27 EU members include many Eastern European countries that are essentially developing economies, not developed nations like the U.S.²⁷

USTA compares regular per capita broadband penetration of certain U.S. states to certain OECD nations. But they are engaging in a complete apples to oranges comparison, because the OECD does not include 3G wireless in their measurements, while USTA's data apparently does. USTA says that New Jersey has a penetration of 30 lines per 100 inhabitants while South Korea has 26. But when 3G wireless is excluded from the U.S. total (enabling a closer apples to apples comparison), New Jersey's penetration drops to 23 verses South Korea's 26 (all data as of June 30th 2006). USTA commits the same error when trying to compare Alaska's total penetration to France's.

But recall that USTA emphasized that household penetration is the right metric. According to Point-Topic/ITU and the FCC, in June of 2006, 81 percent of South Korean homes

²⁷ The EU includes countries like Romania (GDP per capita of \$9,100 USD) and Cyprus (GDP per capita of \$7,100 USD), which are economically far less developed than the United States (GDP per capita of \$44,000, the fourth largest in the OECD; see <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2004rank.html>).

had broadband versus just 60.7 percent of New Jersey homes (New Jersey has the second highest home broadband penetration of the U.S. states, right behind Hawaii at 61.1 percent). And how does Alaska compare to France? France wins with 46.6 percent household penetration versus 44.4 percent of Alaskan households.

The basic reality is, even under the policy-irrelevant state to country comparative lens, half of the OECD nations outperform two-thirds of the U.S. states in household broadband adoption. Put another way, the 14 countries ahead of the U.S. in the OECD rankings had (as of June 30th 2006) higher household broadband adoption rates than 34 of the 51 U.S. states (including D.C.).

USTA points out that the U.S. has more broadband connections than any other nation, but we fail to see how this is a meaningful comparison. Under this approach, we could say the U.S. has more unemployed persons than any other country in the OECD, including developing economies like Mexico. But when viewed through the sensible per capita lens, which accounts for country population, the U.S. has one of the lowest unemployment rates in the entire OECD. To tout absolute numbers without some sort of denominator is misleading at best. China now has almost as many broadband connections as the U.S., and will likely overtake us this year. But they have four-times as many people as the U.S., and yet our household adoption rate is nearly four-times higher than China's. When they overtake us in the raw number of connections, it is unlikely that this will be seen as the U.S. "falling behind" China.

USTA tries to excuse the U.S. ranking by blaming it on geography -- that because we have large open spaces, we're at a disadvantage. This is certainly an attractive argument, as it is much cheaper on a per-line basis to wire 100 apartments in a single high-rise building than it is to wire 100 homes sparsely spread out in the high-desert plains of northern New Mexico. It's a

basic phenomenon known as “economies of density”. But the simple fact is population density is the wrong metric to capture this phenomenon. For example, Nevada has the 8th lowest population density of the 50 U.S. states. But if you look at the percentage of a state’s population living in urban areas, Nevada has the 3rd highest urban population, as over 90 percent of that state’s population lives in the Las Vegas area. The relevant metric to capture the phenomenon of economies of density is the ***percent of the population living in urban areas***, because it’s the proportion of densely packed population that matters, not the geographic size of a state or country.

The lack of merit in the population density argument is seen by a close examination of the OECD data. Iceland has one of the lowest population densities in the world, but has the 3rd highest broadband penetration in the OECD (and the second highest household penetration). Furthermore, 5 of the 14 countries ahead of the U.S. in the OECD broadband rankings have lower population densities than the U.S.²⁸

And when we look at the differences in urban population among the OECD nations, we also see no significant correlation.²⁹ Countries like the Netherlands and Switzerland have lower percentages of their population living in urban areas than the United States, yet have higher broadband penetration rates. Similarly, countries like New Zealand and Germany have higher percentages of urban population than the United States but lower broadband penetration levels. In total, 8 of 14 countries ahead of the U.S. in the OECD broadband rankings have lower percentages of their population living in urban areas.

²⁸ See Figure 6 in “Comments of Consumers Union, Consumer Federation of America and Free Press” In the Matter of *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, GN Docket No. 07-45, submitted May 16th 2007.

²⁹ *Ibid.*, Figure 7.

In their comments, USTA did attempt to address the issue of ruralness/urbanicity with a U.S.- Canada comparison. USTA wrote, “[a]lthough Canada – like the United States – stretches from one end of the continent to the other, eighty percent of its population is extremely concentrated along the U.S. border. In contrast, residents of the United States are broadly dispersed throughout the great expanse of the country.”³⁰ They were correct in saying that Canada is 80 percent urban. But so is the United States. According to the latest data from the U.S. Census Bureau, 21 percent of the population living in the 50 states and DC live in rural areas -- we’re 79 percent *urban*.³¹ Thus the U.S. and Canada are both large countries with moderate sized rural populations, yet Canada has a far higher level of broadband adoption.

The simple fact is geographic factors alone cannot explain why the United States lags behind. Factors like income, income distribution, public policy, and market competition play a far bigger role, as numerous econometric comparative studies have shown.³²

International rankings matter. They are not just a point of pride, but represent billions in lost producer and consumer surplus, and potentially millions of real jobs lost to overseas workers. The Commission should ignore the diversionary tactics of making excuses for our poor broadband performance and move forward towards an honest assessment of what has worked well overseas.

³⁰ USTA Comments, p. 17.

³¹ According to the U.S. Census Bureau, in 2000 there were 222,360,539 persons living in urban areas in the 50 states and DC -- 79 percent of the 281,421,906 total persons.

³² S. Derek Turner: “Universal Service and Convergence: USF Policy For the 21st Century”, presented at the 34th Research Conference on Communication, Information and Internet Policy (TPRC), September 2006.

III. Conclusion

We believe the record in this proceeding is clear. The value of more meaningful broadband data collected in the manner we have suggested is immeasurable. It will allow the Commission for the first time to construct a detailed and accurate portrait of the U.S. broadband market -- something that is required if the Commission is to fulfill the requirements of Section 706. Lessons from California show that the right data can be provided with minimal burden on the part of incumbent broadband companies. The Commission should draw on these lessons as it formulates new rules for Form 477.

Respectfully submitted,

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